



Application No. 10/542,017

Attorney Docket No. 052738

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1. (Currently Amended): A broad band cholesteric liquid crystal film comprising: a cholesteric liquid crystal film obtained by coating a liquid crystal mixture containing a polymerizable mesogen compound (a), a polymerizable chiral agent (b) and a photoisomerizable material (c) on a substrate ~~to ultraviolet polymerize thereof~~ and polymerizing by ultraviolet radiation, having a reflection bandwidth of 200 nm or more,

wherein the photoisomerizable material (c) is at least one photoisomerizable material selected from the group consisting of stilbene and azobenzene.

2. (Original): The broad band cholesteric liquid crystal film according to claim 1, wherein a pitch length in the cholesteric liquid crystal film changes continuously.

3. (Currently Amended): The broad band cholesteric liquid crystal film according to claim 1, wherein the liquid crystal mixture ~~comprising~~ further comprises a photopolymerization initiator (d).

4. (Previously presented): The broad band cholesteric liquid crystal film according to claim 1, wherein the polymerizable mesogen compound (a) has one, or two or more of polymerizable functional groups, the polymerizable chiral agent (b) has one, or two or more polymerizable functional groups.

5. Cancelled.

6. (Previously presented): A manufacturing method for the broad band cholesteric liquid crystal film according to claim 1 comprising steps of: coating a liquid crystal mixture containing

a polymerizable mesogen compound (a), a polymerizable chiral agent (b) and a photoisomerizable material (c) on a substrate and ultraviolet polymerizing thereof.

7. (Previously presented): A circularly polarizing plate comprising the broad band cholesteric liquid crystal film according to claim 1.

8. (Currently Amended): A ~~linearly~~ linear polarizer comprising the circularly polarizing plate according to claim 7 and a $\lambda/4$ plate ~~laminating~~ laminated on the circularly polarizing plate.

9. (Currently Amended): The ~~linearly~~ linear polarizer according to claim 8, wherein the circularly polarizing plate, which comprises is the broad band cholesteric liquid crystal film, is ~~laminating~~ laminated on the $\lambda/4$ plate so that a pitch length in the film is narrowed toward the $\lambda/4$ plate continuously.

10. (Currently Amended): A ~~linearly~~ linear polarizer comprising an absorption polarizer ~~adhering~~ adhered to the linearly polarizer according to claim 8 so that a transmission axis direction of the absorption polarizer and a transmission axis of the linearly polarizer are arranged in parallel with each other.

11. (Previously presented): A luminaire comprising the circularly polarizing plate according to claim 7 on a front surface side of a surface light source having a reflective layer on the back surface side thereof.

12. (Original): A liquid crystal display comprising a liquid crystal cell in a light emitting side of the luminaire according to claim 11.

13. (Currently Amended): A polarizing element system comprising: a retardation layer (b) having a front face retardation (in the normal direction) of almost zero and a retardation of

$\lambda/8$ or more relative to incident light incoming at an angle of 30° or more inclined from the normal direction is arranged between at least two layers of a reflection polarizer (a) having respective selective reflection wavelength bands of polarized light superimposed on each other,

wherein the reflection polarizer (a) is the circularly polarizing plate according to claim 7.

14. (Currently Amended): The polarizing element system according to claim 13, wherein a selective reflection wavelength of the at least two layers of the reflection polarizer (a) is are superimposed on each other in the wavelength range $550\text{ nm} \pm 10\text{ nm}$.

15. (Previously presented): The polarizing element system according to claim 13, wherein the retardation layer (b) is a layer comprising a cholesteric liquid crystal phase having a selective reflection wavelength band other than the visible light region fixed in planar alignment.

16. (Previously presented): The polarizing element system according to claim 13, wherein the retardation layer (b) is a layer comprising a rod-like liquid crystal fixed in homeotropic alignment state.

17. (Previously presented): The polarizing element system according to claim 13, wherein the retardation layer (b) is a layer comprising a discotic liquid crystal fixed in nematic phase or columnar phase alignment state.

18. (Currently Amended): The polarizing element system according to claim 13, wherein the retardation layer (b) is a layer comprising a biaxially ~~orienting~~ oriented polymer film.

19. (Previously presented) The polarizing element system according to claim 13, wherein the retardation layer (b) is a layer comprising an inorganic layered compound with negative

uniaxiality fixed in alignment state where an optical axis thereof is a normal direction of a surface thereof.

20. (Currently Amended): A wide viewing angle liquid crystal display comprising at least:

a backlight system containing a polarizing element system according to claim 13 to collimate a light from a diffuse light source;

a liquid cell transmitting collimated light;

a polarizing plate arranged on both sides of the liquid crystal cell; and

a viewing angle magnification film, which diffusing transmitted light, arranged on a viewer side of the liquid cell.

21. (Currently Amended): The wide viewing angle liquid crystal display according to claim 20, wherein a $\lambda/4$ plate is arranged on the viewer side (the liquid crystal cell side) of the polarizing element system so that an axial direction of linearly polarized light transmitted and a transmission axis direction of a polarizing plate on the lower side (the light source side) of the liquid crystal display are arranged in parallel with each other.

22. (Previously presented): The wide viewing angle liquid crystal display according to claim 20, wherein the viewing angle magnification film is a diffuse plate substantially having neither backscattering nor polarization cancellation.

23. (Previously presented) The wide viewing angle liquid crystal display according to claim 20, wherein an each layer is laminated with a translucent adhesive or a pressure sensitive adhesive.

24. (Currently Amended): A luminaire comprising the ~~linearly~~ linear polarizer according to claim 8 on a front surface side of a surface light source having a reflective layer on the back surface side thereof.

25. (Previously presented): The wide viewing angle liquid crystal display according to claim 21, wherein the viewing angle magnification film is a diffuse plate substantially having neither backscattering nor polarization cancellation.